

John Carlin
Site Vice President

R.E. Ginna Nuclear Power Plant, LLC
1503 Lake Road
Ontario, New York 14519-9364
585.771.5200
585.771.3943 Fax

John.Carlin@cengllc.com

CENG

a joint venture of



Constellation
Energy



February 26th, 2010

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

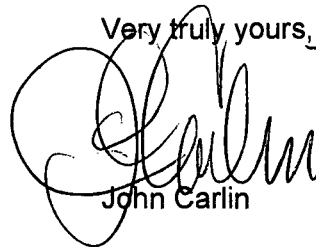
ATTENTION: Document Control Desk

SUBJECT: R.E. Ginna Nuclear Power Plant
Docket No. 50-244

**LER 2009-002, Plant trip due to loss of Electro-Hydraulic Control
system pressure**

The attached Licensee Event Report (LER) 2009-002 is submitted under the provisions of NUREG 1022, Event Reporting Guidelines. There are no new commitments contained in this submittal. Should you have any questions regarding the information in this letter, please contact Mr. Thomas Harding at (585) 771-5219.

Very truly yours,



John Carlin

Attachments: (1) LER 2009-002

cc: S.J. Collins, NRC
D.V. Pickett, NRC
Resident Inspector, NRC (Ginna)

WPLNRC-1002260

1E22
NRC

ATTACHMENT 1

LER 2009-002

NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0104 Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.		EXPIRES: 08/31/2010		
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)								
1. FACILITY NAME R.E. Ginna Nuclear Power Plant				2. DOCKET NUMBER 05000 244		3. PAGE 1 OF 6		
4. TITLE Plant Trip Due to Loss of Electro-Hydraulic Control System Pressure								
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR
12	30	2009	2009	- 002 -	0	02	26	2010
			8. OTHER FACILITIES INVOLVED					
			FACILITY NAME			DOCKET NUMBER		
						05000		
			FACILITY NAME			DOCKET NUMBER		
						05000		
9. OPERATING MODE		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)						
1		<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(vii)						
		<input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A)						
		<input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(viii)(B)						
		<input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A)						
		<input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x)						
		<input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4)						
10. POWER LEVEL								
100%		<input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5)						
		<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER						
		<input type="checkbox"/> 20.2203(a)(2)(vi) <input type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D)						
		Specify in Abstract below or in NRC Form 366A						
12. LICENSEE CONTACT FOR THIS LER								
FACILITY NAME Thomas Harding, Licensing Director						TELEPHONE NUMBER (Include Area Code) (585) 771-5219		
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	REPORTABLE TO EPIX
B	TG	P		Y				
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO						MONTH DAY YEAR _____		
<p>On December 30, 2009, the R.E. Ginna Nuclear Plant experienced an automatic plant trip from full power. The trip was initiated upon a signal of two out of two turbine stop valves being fully closed. The two stop valves closed when the electro-hydraulic control system (EHC) could not maintain adequate EHC system pressure to keep the stop valves in the fully open position. The control room operators performed the appropriate actions of procedures E-0, Reactor Trip or Safety Injection and ES-0.1, Reactor Trip Response. Following the reactor trip, all safety systems operated as designed. The reactor was stabilized in Mode 3.</p> <p>The cause of the EHC pressure loss was a common mode failure of both EHC pumps caused by the incorrect seal material being used during vendor refurbishment of the pumps that were installed during the 2009 refueling outage (RFO). The specified material was Viton, however evaluation identified that Buna-N was provided which is incompatible with the EH fluid.</p> <p>Corrective actions to prevent recurrence are summarized in Section IV.B.</p>								

NRC FORM 366A (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		
LICENSEE EVENT REPORT (LER)				
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE
R.E. Ginna Nuclear Power Plant	05000244	YEAR	SEQUENTIAL NUMBER	REV NO.
		2009	-- 002 --	00
				2 of 6

I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS:

The reactor was in Operational Mode 1 at 100% power, 2235 psig and 574 degrees F. Operations was responding to indications of high EH oil temperature.

B. EVENT:

At approximately 0437 EST on December 30, 2009, the R.E. Ginna Nuclear Plant experienced an automatic reactor trip from full power. The trip was initiated upon a signal of two out of two turbine stop valves being fully closed. The two stop valves closed when the EHC system could not maintain adequate pressure to keep the stop valves in the fully open position. The reduced pressure permitted the stop valve discs to enter the steam flow, which accelerated the closure of the valves.

The function of the EHC high-pressure fluid control system is to provide a motive force which positions the turbine control valves (TCV) in response to electronic commands from the electronic controller, acting through the servo-actuators, and maintain the turbine stop valves (TSV) open. The motive force is provided by two redundant positive displacement vane pumps, which take suction from the fluid reservoir. Immediately downstream of the pumps, two pilot operated unloader valves cycle to regulate system pressure.

During the September 2009 RFO, both EHC pumps were replaced with refurbished pumps. These pumps were refurbished by a vendor who installed the incorrect seal and O-ring materials. This was not identified by site personnel prior to installation.

Prior to the plant trip, operators were responding to high temperatures in the EHC fluid system and were taking actions to lower temperature. An auxiliary operator identified that the 'B' pump was continuously loading. Operations swapped to the 'A' pump and secured the 'B' pump. Shortly after pumps were swapped, the auxiliary operator identified rapidly decreasing EH pressure. The trip occurred within a few minutes of this discovery.

Troubleshooting after the event revealed that the pumps were not performing to design, i.e. the pump flow rates were significantly lower during higher system pressure operation. The in-service pumps were removed and examined. The investigation revealed that the pump seals were significantly degraded. The seal material was analyzed by Ginna's Materials Lab and determined to be Buna-N (butadiene), which is not compatible with the EH fluid, Houghto-Safe 1120. Material testing of Buna N in Houghto-Safe fluid has been conducted, and elevated temperatures result in more rapid degradation.

NRC FORM 366A (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		
LICENSEE EVENT REPORT (LER)				
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE
R.E. Ginna Nuclear Power Plant	05000244	YEAR	SEQUENTIAL NUMBER	REV NO.
		2009	-- 002 --	00
				3 of 6

C. INOPERABLE STRUCTURES, COMPONENTS OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

The control room alarm for EH fluid temperature was out of service due to a failed sensor. This equipment was out of service since October 2009 when the sensor was broken during RFO maintenance.

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

09/2009		Both EH pumps replaced during RFO
12/30/2009	0415	Operations identifies high temperature condition
12/30/2009	0430	Operations swaps EH operation from "B" to "A" pump
12/30/2009	0437	Turbine Stop Valves Close – Reactor Trip – Entered Mode 3
01/05/2010	0815	Plant entered Mode 1 on restart

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

The hydraulic actuator for the 'B' turbine stop valve was determined to have failed during the abnormal closure, causing a leak of EHC fluid in the high pressure turbine enclosure. The actuator is not designed to withstand the forces of steam pressure on the valve disc without a coincident turbine trip signal and materials analysis showed this was an abrupt failure of the bolting. In addition, the secondary system transient caused a failure of a 3B feedwater heater relief valve piping connection and subsequent secondary side water hammer events occurred when condensate pumps were secured to stop this leak.

F. METHOD OF DISCOVERY:

Operations was in the process of correcting the high EH fluid temperature condition when the plant trip occurred.

G. MAJOR OPERATOR ACTION:

Operations entered E-0 and ES-0.1 for a reactor trip and stabilized the plant in Mode 3.

H. SAFETY SYSTEM RESPONSES:

The reactor protection system operated as expected as a result of the turbine stop valve closure. The Anticipated Transient Without Scram (ATWS) mitigation system actuated, starting the turbine driven auxiliary feedwater pump. The motor driven auxiliary feedwater pumps automatically started prior to this signal based on low-low steam generator level. All systems operated as expected.

NRC FORM 366A (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		
LICENSEE EVENT REPORT (LER)				
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE
R.E. Ginna Nuclear Power Plant	05000244	YEAR	SEQUENTIAL NUMBER	REV NO.
		2009	-- 002 --	00
				4 of 6

II. CAUSE OF EVENT:

The events are NUREG-1022 Cause Code B, Design, Manufacturing, Construction/Installation.

This event was entered into the site corrective action program (CR-2010-000084). The turbine stop valves closed due to inadequate EH fluid pressure to keep them open. The EH pumps failed to maintain proper pressure due to degradation of the pump seal caused by chemical attack to the seal material by the EH fluid. The wrong material was used in the seals and O-rings during an offsite vendor refurbishment of the pumps, which were placed in service approximately three months earlier during the 2009 RFO. Since the internal seal materials were not readily accessible, the incorrect materials were not recognized during pump installation. The Preventive Maintenance program allowed for refurbishment as described in the vendor manual instead of replacement as was recommended by Westinghouse who supplied the equipment. In addition, both pumps were scheduled for replacement at the same time, which allowed for a common cause failure to occur.

III ANALYSIS OF THE EVENT:

This analysis is reportable in accordance with 10 CFR50.73, Licensee Events Report System under item (a)(2)(iv) based on the actuation of the Reactor Protection System and Auxiliary Feedwater System.

An assessment was performed considering both the safety consequences and implications of this event with the following conclusions:

Reactor trip breakers opened as required and control rods inserted as designed. Heatup and pressurization of the Reactor Coolant System (RCS) presented no significant challenge to RCS pressure control systems and no Power Operated Relief Valve (PORV) or safety valve actuation occurred. Over-Temperature Delta-Temperature runback criteria were met on three out of four channels and the other channel called for a reactor trip. Maximum steam generator secondary side pressures were well below the atmospheric relief valve pressure setpoint. Automatic actuation of both motor driven auxiliary feedwater pumps occurred when the water level in steam generator 'B' lowered below the low-low level setpoint. The turbine driven auxiliary feedwater pump automatically started due to the ATWS mitigation system on a low feedwater flow signal. All auxiliary feedwater pumps performed as expected and met required flow rates.

The plant transient response is bounded by the Loss of External Electrical Load transient analyzed as part of the licensing basis described in the UFSAR.

A water hammer event occurred on the secondary plant as a result of the condensate pumps being secured in response to a condensate leak from the failed 3B feedwater heater relief valve piping connection. In addition, the 'B' turbine stop valve actuator failed causing an EH leak. While these issues complicated restart of the plant and presented an industrial safety concern, they did not have a significant effect on the plant response to the trip.

NRC FORM 366A (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION			
LICENSEE EVENT REPORT (LER)					
1. FACILITY NAME		2. DOCKET	6. LER NUMBER		3. PAGE
R.E. Ginna Nuclear Power Plant		05000244	YEAR	SEQUENTIAL NUMBER	REV NO.
			2009	-- 002 --	00
					5 of 6

Based on the above considerations, the nuclear safety consequences of this event are very low.

This event impacted NRC performance indicator IE01, Unplanned Scrams per 7000 Critical Hours. This value changed from 0 to 0.8 in the month of December.

IV CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

Both EH pumps were replaced with new pumps (verified seal materials). The condensate heater relief valve line was repaired and the turbine stop valve actuator cylinder was replaced.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE

Note: There are no regulatory commitments in this Licensee Event Report

Initial Action: A modification was performed to provide a more conservative control room alarm setting for low EH pressure and a repair was performed to the EH temperature sensor.

Long Term Corrective Actions: Updates to the preventive maintenance program are planned such that the pumps will be replaced vs. refurbished, procurement requirements will be augmented, and redundant pump replacement will be staggered in time to minimize common cause failures. A modification is planned to add EHC pressure and temperature indications and alarms to the Plant Process Computer System (PPCS).

Additional corrective and preventive actions are identified in the site Root Cause Analysis Report which addresses contributing organizational and human performance issues.

V. ADDITIONAL INFORMATION:

A. FAILED COMPONENT

EH Pumps 'A' and "B" failed to maintain proper EH pressure due to seal degradation. These are Denison series T6C vane pumps

B. PREVIOUS LERS ON SIMILAR EVENTS

A review of Ginna events over the past five years identified the following similar event:

LER 2007-001 Loss of Electrical Generation Results in Plant Trip

NRC FORM 366A (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		
LICENSEE EVENT REPORT (LER)				
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE
R.E. Ginna Nuclear Power Plant	05000244	YEAR	SEQUENTIAL NUMBER	REV NO.
		2009	-- 002 --	00
				6 of 6

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

<u>COMPONENT</u>	<u>IEEE 803 FUNCTION IDENTIFIER</u>	<u>IEEE 805 SYSTEM IDENTIFICATION</u>
PEH01	P	TG
PEH02	P	TG

D. SPECIAL COMMENTS

None